PERATURAN PERMARKAHAN AMALI BIOLOGI KERTAS 3

PEPERIKSAAN PERCUBAAN SPM TAHUN 2025

<table>
<tr><th>NO</th><th>SKEMA PERMARKAHAN</th><th>SKOR</th></tr>
<tr><td>(a)

[Memerhati]
[Berkomunikasi]</td><td>Dapat merekod pemerhatian dalam Jadual 1
Able to record the observations in Table 1

Jawapan
Answers:

<table>
<tr><th rowspan="2">Tabung uji
Test tube</th><th rowspan="2">Perubahan warna kertas litmus biru
Color change of blue litmus paper</th><th colspan="2">Kejernihan atau kekeruhan
Clarity or turbidity</th></tr>
<tr><th>Pada permulaan ekperimen
At the beginning of the experiment</th><th>Selepas 20 minit
After 20 minutes</th></tr>
<tr><td>P</td><td>Tidak berubah / kekal biru / biru</td><td>Keruh
Turbid</td><td>Keruh / Tidak berubah
Turbid/ No changes</td></tr>
<tr><td>Q</td><td>Merah
Red</td><td>Keruh
Turbid</td><td>Jernih
Clear</td></tr>
</table>

Rubrik
<table>
<tr><th>Tick (√)</th><th>Markah</th></tr>
<tr><td>0 - 1</td><td>0 m</td></tr>
<tr><td>2 - 3</td><td>1 m</td></tr>
<tr><td>4 - 5</td><td>2 m</td></tr>
<tr><td>6</td><td>3 m</td></tr>
</table></td><td>3</td></tr>
<tr><td>(b)

[Inferens]]</td><td>Boleh menyatakan inferens untuk pemerhatian di tabung uji P dan Q
Can state inference for observation in test tube P and Q.

Jawapan:
Answers:

Tabung uji P / Test tube P
Tidak berlaku / tak lengkap hidrolisis ampaian albumen / protein
No / incomplete hydrolysis of the albumen suspension / protein

Tabung uji Q / Test tube Q
Berlaku hidrolisis ampaian albumen / protein
Hydrolysis of the albumen suspension / protein occurs</td><td>2</td></tr>
</table>

(c) (i) [Mengawal pembolehubah]	Dapat menyatakan pembolehubah dimalarkan. *Able to state constant variable*. Jawapan: *Answers:* Kepekatan larutan pepsin *Concentration of pepsin solution* Isipadu larutan pepsin *volume of pepsin solution* Kepekatan ampaian albumen *Concentration of albumen suspension* Isipadu ampaian albumen *volume of albumen suspension* Tempoh / Masa eksperimen *duration / time of experiment* Suhu persekitaran / suhu bilik *surrounding / room temperature* * FAO – First attempt only	1
(c) (ii)	Dapat menyatakan pembolehubah bergerak balas. *Able to state responding variable*. Jawapan: *Answers:* Kejernihan atau kekeruhan campuran *The clarity or turbidity of the mixture*	1
(d) [Mentafsir data]	Dapat membuat hubungan yang betul berdasarkan berdasarkan kriteria berikut: *Able to make a correct relationship based on the following criteria:* H: Tindak balas enzim pepsin paling aktif dalam medium berasid. *The pepsin enzyme reaction is most active in an acidic medium.* P1: pH optimum enzim pepsin ialah sekitar pH 1.5 – 2.5 *The optimum pH for the pepsin enzyme is around pH 1.5 to 2.5* P2: ampaian albumen dihidrolisiskan *albumen suspension is hydrolysed*	3

<table>
<tr><td></td><td>Contoh jawapan:
Sample answers:

Tindak balas enzim pepsin paling aktif dalam medium berasid. Ini kerana pH optimum bagi enzim pepsin ialah sekitar pH 1.5 – 2.5. Oleh itu, ampaian albumen dihidrolisiskan.
The pepsin enzyme reaction is most active in an acidic medium. This is because the optimum pH for pepsin is around pH 1.5 to 2.5. Therefore, the albumen suspension is hydrolysed.</td><td></td></tr>
<tr><td>(e)(i)

[Meramal]</td><td>Boleh mencadangkan prosedur.
Able to suggest a procedure.

Jawapan:
Answer:

Rendamkan tabung uji P dan Q ke dalam kukus air yang suhunya ditetapkan pada 37°C
Immerse test tubes P and Q in a water bath with a fixed temperature of 37°C</td><td>1</td></tr>
<tr><td>(e)(ii)

[Meramal]</td><td>Boleh menerangkan dengan betul berdasarkan kriteria berikut:
Able to explain correctly based on the following criteria:

P1- 37°C adalah suhu optimum
37°C is the optimum temperature

P2- tindakan enzim pepsin menjadi lebih cepat
the action of the pepsin enzyme becomes faster</td><td>2</td></tr>
<tr><td>(f)

[Mengelas]</td><td>Boleh mengelaskan bahan dengan padanan yang betul
Able to classify materials with correct matches.

<table>
<tr><th>Substrat
Substrate</th><th>Enzim
Enzyme</th><th>Hasil
Product</th></tr>
<tr><td>maltosa
maltose</td><td>maltase
maltase</td><td>glukosa
glucose</td></tr>
<tr><td>protein
protein</td><td>pepsin
pepsin</td><td>polipeptida
polypeptide</td></tr>
</table>

* substrat, enzim dan hasil mesti sepadan
substrate, enzyme and product must match</td><td>1

1</td></tr>
</table>